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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HO, CHUONG T	
ART UNIT	**PAPER NUMBER**
2664	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/429,632	MATSUZAWA ET AL.	
	Examiner	Art Unit	
	CHUONG T. HO	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,6-14 and 16-22* is/are rejected.

7)☒ Claim(s) *3 and 5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The amendment filed 02/11/04 have been entered and made of record.

2. Applicant's amendment with respect to claims 1, 3-14 and 16-22 have been considered but are not persuasive.

As per to Applicant's argument, the Applicant alleged that "page 11, lines 9-11, Han (U.S.Patent No. 6,351,465 B1) and Civanlar (U.S.Patent No. 5,996,021) fall to disclose or suggest already set up cut-through paths that are used to route packets to a same destination node".

The Applicant's argument is not persuasive.

Han discloses already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination).

As per to Applicant's argument, the Applicant alleged that "page 12, lines 4-5, Civanlar et al. failed to suggest or teach any specific load balancing".

The Applicant's argument is not persuasive.

See figure 3, Civanlar discloses a load balancing among a plurality of other routers connected to a specific router (see figure 3, col. 9, lines 28-45, Each IPRS 120-123 stores a forwarding table in memory, each of which has substantially the same structure as that shown in Table 2 above...least cost path to the next IPRS in a IP packet's transmission path....Moreover, if PORT ID (2) is selected and **load balancing** is enable) (see col. 9, lines 54-60, the forwarding table in each IPRS and IPRR are also dynamically updated based on the topology or link-state of the network. Thus, when the topology of the network changes by the addition or subtraction of IPRSs and/or IPRSs,

the optiman paths across the core network may change and the forwarding table change accordingly). Therefore, Civanlar clearly discloses or suggests a loading balancing among a plurality of othter router connected to a specific router (IPRSs 120-123).

3. Claims 1, 3-14 and 16-22 are pending.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1 Claims 1, 4, 10, 14, 16, 17, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Civanlar et al. (U.S.Patent No. 5,996,021) in view of Han (U.S.Patent No. 6,351,465 B1).

In the claim 1, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);

- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;
- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)

- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore, the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

5. In the claims 4, 16, Han discloses the number of cut-through paths at plurality of routers are evently distributed among plurality of routers according to link rates with respect to plurality of routers (see col. 6, lines 30-55).

In the claim 10, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);

- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;
- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)

- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore, the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

6. In the claim 14, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);
- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;

- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)
- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore, the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

6. In the claim 17, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);
- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;
- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a

label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)
- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore, the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

8. In the claim 19, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);
- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;
- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)
- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore,

the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

9. In the claim 20, Civanlar et al. discloses the relay switch network communicates with the ingress router, receives the IP packet from the ingress router and forwards the IP packet along its transmission path based on destination information included in its attached label. The egress router receives the IP packet from the switch network and forwards it to a destination network (see abstract); comprising:

- selecting one router among a plurality of routers so as to contribute a load balancing (see col. 9, lines 28-45, lines 54-59);
- according to a whole or a prescribed part of information regarding a state of cut-through path set-up in which the router device is involved (see col. 9, lines 28-45, lines 54-59), at a time of setting up a cut-through path in the multi-path;
- carrying out a prescribed control for setting up the cut-through path with one router as the next hop router (see col. 4, lines 5-10) (see col. 7, lines 29-31, IPRR 110 perform Layer-3 processing on the IP packet, as well as attaching a label to the IP packet based on information included in a routing table stored in a memory device in IPRR 110 indicating that the next hop router is IPRR 113, considered the egress IPRR).

However, Civanlar et al. is silent to disclosing selecting one router according to a number of already set up cut-through paths that are used to route packets to a same destination node such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers.

See figures 4-5, Han discloses the system uses ATM switches as high performance Internet router by using standard ATM signaling to set up cut-through paths; comprising:

- a cut-through path control system at a router device (ATM router 50) at which multi-path exists (43, 45), comprising the steps of:
- already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination)
- such that numbers of cut-through paths at plurality of routers are uniformly distributed among plurality of routers (see col. 6, lines 1-8, col. 7, lines 1-7) (see col. 6, lines 26-35);

Both Civanlar and Han disclose the cut-through paths. Han recognizes already set up cut-through paths that are used to route packets to a same destination node (see abstract, the cut-through paths are switched Virtual Paths which are shared with similar flows toward the same destination);

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Civanlar's system with the teaching of Han to select one router among a plurality of routers in order to route packets to a same destination. Therefore, the combined system would have been enable the cut-throudh paths with respect to the routers can be balanced overall.

7. Claims 6, 7, 8, 9, 11, 12, 13, 18, and 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined system of Civanlar(5996021) – Han (6351465) in view Katsube et al. (U.S.Patent No. 6,185,213 B1).

In the claim 6, the combined system of (Civanlar – Han) discloses the limitations of claim 1 above.

However, the combined system of Han - Civanlar is silent to disclosing sending a message for setting up the cut-through path to one router; and making an information setting necessary for utilizing the cut-through path when the cut-through path is set up .

Katsube et al. discloses sending a message for setting up the cut-through path to one router; and making an information setting necessary for utilizing the cut-through path when the cut-through path is set up (see col. 10, lines 6-25)

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify combined system (Civanlar - Han) with the teaching of Katsube to send a message for setting up the cut-through path to one router; and making an information setting necessary for utilizing the cut-through path when the cut-through path is set up in order to judge the next hop information.

8. In the claim 7, Katsube et al. discloses sending a message for setting up the cut-through path to one router when no other already set up cut-through path to one router exists, and making an information setting necessary for utilizing the cut-through path when the cut-through path is set up; and making another information setting necessary for merging the cut-through path with an already set up cut-through path to one router when the already set up cut-through path exists (see col. 10, lines 5-25).

9. In the claim 8, 21, Katsube et al. discloses the setting up of the cut-through path starts a timing of receiving a message for setting up the cut-through path from a node device on an upstream side (see col. 10, lines 53-55).

10. In the claims 9, 18, Katsube et al. discloses selecting one cut-through path that contributes to the load balancing when a route change is made, among cut-through paths for which the route change at the router device is possible; and changing a route of one cut-through path so as to contribute to the load balancing (see col. 2, lines 45-50).

11. In the claims 11, 12, 13, Katsube et al. discloses checking a traffic amount to each of a plurality of node devices that are next hop nodes of cut-through paths from the router device at prescribed timings; wherein the selecting step selects one cut-through path that satisfies a prescribed condition regarding the traffic amount when a level of imbalance among traffic amount to plurality of node exceeds a prescribed tolerable range, one cut-through path being in a multi-path with one node device with less traffic amount as a next hop node; and the changing step changes the route of one cut-through path by changing the next hop node of one cut-through path to another node device with more traffic amount (see col. 8, lines 40-67, col. 9, lines 1-4)

12. In the claim 22, Katsube et al. discloses the control unit sends a message for setting up the cut-through path to one router, and makes an information setting necessary for utilizing the cut-through path when the cut-through path is set up (see col. 8, lines 40-67, col. 9, lines 1-4).

Allowable Subject Matter

Claims 3, 5, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: the prior art (6185213, 6351465, 5996021, 6374303) of record does not appear to teach or render obvious the claimed limitations in combination with the specific added limitations, as recited from dependent claim 3: "assigning possible residue values starting from 0 that are obtainable by dividing a given integer by a total number of plurality of routers, respectively to plurality of routers, one residue value per each router; and selecting one plurality of routers which is assigned with a residue value obtained by dividing the number of already set up cut-through paths by the total number of plurality of routers as one router".

The following is an examiner's statement of reasons for allowance: the prior art (6185213, 6351465, 5996021, 6374303) of record does not appear to teach or render obvious the claimed limitations in combination with the specific added limitations, as recited from dependent claim 5: "assigning possible residue values starting from 0 that are obtainable by dividing a given integer by total of elements constituting an integer ratio indicating or approximating a ratio of the link rates with respect to plurality of routers, respectively to plurality of routers, as many residue values as a number proportional to a link rate with respect to each router per each router and selecting one of plurality of routers which is assigned with a residue value obtained by dividing the

number of already set-up cut-through paths by the total of the elements constituting the integer ratio as one router".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong Ho whose telephone number is (571)272-3133. The examiner can normally be reached on Monday-Friday from 9am to 4pm.

14. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington, Chin, can be reached on (571)272-3134.

Any inquiry of a general nature or relating to the status of this application or proceeding should be direct to the group receptionist whose telephone number is (703) 305-3900.

Ajit Patel
Primary Examiner

CH

05/30/05